

What is claimed is:

1. A method for fabricating a capacitor of a semiconductor device, comprising the steps of:

- 5       (a) forming a conductive silicon layer for a bottom electrode on a substrate;
- (b) nitridating the conductive silicon layer;
- (c) oxidizing the nitridated conductive silicon layer;
- 10       (d) forming a silicon nitride layer on a surface of the oxidized layer;
- (e) forming a dielectric layer on the silicon nitride layer; and
- (f) forming a top electrode on the dielectric layer.

15

2. The method as recited in claim 1, wherein at the step (c), a native oxide layer is used.

3. The method as recited in claim 2, wherein the  
20 native oxide layer is formed in a thickness ranging from about 1 Å to about 5 Å.

4. The method as recited in claim 3, wherein at the step (b), a thermal treatment process is carried out in an  
25 atmosphere of  $\text{NH}_3$  gas and at a pressure ranging from about 10 Torr to about 100 Torr.

5. The method as recited in claim 4, wherein the silicon nitride layer is formed by using a source of  
30 dichlorosilane (DCS) in an atmosphere of  $\text{NH}_3$  gas and at a pressure ranging from about 1 Torr to about 10 Torr.

6. The method as recited in claim 3, wherein the

dielectric layer is comprised of a material having one of a high dielectric constant and being a ferroelectric substance.

- 5            7.     The method as recited in claim 6, wherein the material is one selected from a group of  $Ta_2O_5$ ,  $Al_2O_3$ ,  $HfO_2$ ,  $(Ba,Sr)TiO_3$  (BST),  $(Pb,Zr)TiO_3$  (PZT),  $(Pb,La)(Zr,Ti)O_3$  (PBZT) and  $Bi_4-XLaXTi_3O_{12}$  (BLT).